

[0017] Referring now more particularly to the accompanying drawings, it should be understood that the roofing system, generally designated ~~[[S]]~~ R-S, and secured on roof deck D is comprised of a series of membranes, generally designated M, which are factory welded along their lapped edges to form the multiple membrane sheet, generally designated S. In Figures 1-4, an adjoining pair of such membranes are numbered generally 10 and 11.

[0018] As shown in Figures 2-4, the factory weld or weld bond 12 extends in a longitudinal direction from the outside edge 12a about an inch to the edge 12b. This weld can be accomplished in the factory under quality control conditions and may comprise a hot air weld effected by hot air (i.e. at a temperature of around 1200°F) which heats the ~~sheets~~ membranes 10 and 11 at the edge of ~~sheet~~ membrane 11 to a welding temperature wherein their confronting thermoplastic surfaces partially melt and form a weld bond 12 of material ~~12~~. The weld bond 12 may also be created by a ~~die-electric~~ dielectric or radio frequency welding process, or other known heat welding or bonding methods. "Factory" welds are recognized to be more reliable than hot air field welds to achieve watertight seams.

[0019] The sheet S, comprised of multiple membranes M, welded in the manner disclosed in the factory, can be supplied to the roofer in rolled sheets of, for example, 2500 square feet in the weld bonded condition shown in Figure 2. Securement of sheet S to the roof can then take place progressively in the manner indicated in Figure 4. With the upper ~~sheet~~ membrane 11 peeled back about ~~its~~ the welded edge 12b, fastener systems or fasteners F comprising fastener members, ~~fasteners~~ or screws 13 with heads

13a extending through fastener square countersunk steel load distribution plates 14 anchor the membranes of sheet S.

[0020] The roof deck D can be comprised of many known surfaces or substrates, such as concrete, wood, asphalt, coal tar, steel, cement, wood fiber and the like, and, for purposes of illustration only, is shown in Figure 3 as comprised of an insulation board or deck member sheet 15 on a wood deck 16, which may be supported by suitable purlins or deck supporting structures in the conventional manner.

[0021] Once the fastener[[s]] members 13 are secured in position with a suitable rotary power tool, a roller applicator or roller brush, generally designated B, having a handle ~~16~~ 16a, may be used to apply a fast-drying liquid adhesive to the surface of the fastening projection or tab ~~or projection~~ 10a, defined by the ~~parting line~~ welded edge 12b, forwardly and across the fastening projection 10a to provide a coating 17 (Figure 3) completely covering both the fastening projection 10 along with the fastener system F comprising the fastener screws or members 13 with heads 13 13a and the fastener plates 14, and filling the depressed wells or cavities W in the membrane 10 along or around the fastener plates 14 as shown in Figure 3. The completely sealing coating 17 also is applied to the free edge 10c of the fastening projection 10a and to the deck member 15 forwardly of the free edge 10c for a predetermined distance 17a, i.e. six inches (6"). It is preferably applied as well as schematically shown at 18a, to the underside of the membrane 11 from ~~weld~~ welded edge 12b forwardly for a distance so as to ultimately mate with the portion of the coating on the fastening projection 10a and the coating portion which extends for the predetermined distance 17a of the coating 17 which is provided on the deck member 15. Because the membranes 10 and 11 are sufficiently flexible, the membrane 11 folds

downwardly as at 11a to follow the free edge 10c and the liquid adhesive fills the space between them as at 17b. Finally, as Figure 3 indicates the adhesive ~~film~~ coating 17-17a feathers out, as at 17c, on the deck member 15

[0022] As indicated previously, not only is the sheet S securely fastened in position mechanically by the fastener[[s]] members 13 extending through each fastening projection ~~10~~ 10a, a substantially continuous monolithic bond is formed by the “factory” weld bond 12 and the “field” adhesive coating 17 to interact with the fasteners ~~13~~ F and prevent wind lift-up forces from applying unevenly and cocking the securing ~~fasteners 13~~ fastener systems F in a manner to tear the membrane. While various ~~of~~ suitable fast-drying liquid adhesives are possible, one such adhesive which will work to secure the membranes in the field is manufactured by Sovereign Specialty Chemicals of Cincinnati, Ohio. With the present system, the number of fasteners ~~13~~ F which need be used to secure the ~~strip~~ sheet S in terms of resisting wind up-lift is considerably fewer. Resistance to membrane tearing, and membrane peeling particularly, is greatly increased and any tendency to pull the fasteners F up at cocked angles rather than straight up is considerably reduced by this monolithic structure.